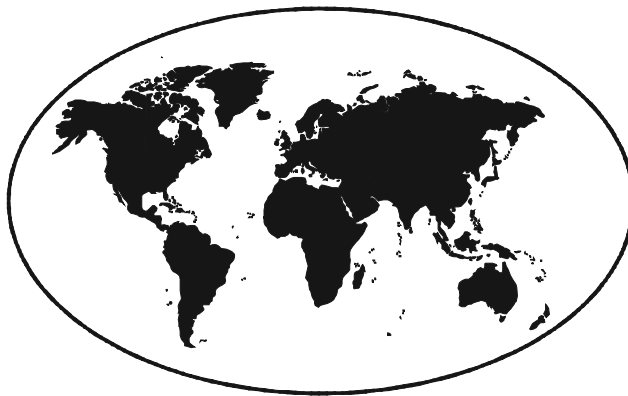


Eurasia Bulletin



INTERNATIONAL PROGRAMS CENTER

Summer 1999

U.S. DEPARTMENT OF COMMERCE
BUREAU OF THE CENSUS
POPULATION DIVISION
INTERNATIONAL PROGRAMS CENTER
EURASIA BRANCH
WASHINGTON PLAZA II, ROOM 116
WASHINGTON, D.C. 20233-8860

DAVID ZASLOW, EDITOR
TELEPHONE: (301) 457-1360
FAX : (301) 457-1539
INTERNET: DZASLOW@CCMAIL.CENSUS.GOV
WORLD WIDE WEB:
<http://www.census.gov/ipc/www/eb.html>

Contents

Page	
1	Introduction
2	National Income Accounts in the Northern Mariana Islands
16	Pension Management and Reform in Asia: An Overview

Introduction

This, the eleventh in a series of reports by the Eurasia Branch, highlights our current work in demography and economics. The focus is on examining and interpreting new and existing data sets produced by statistical organizations of Eastern Europe, the former Soviet states, and Asia. The first article of this issue is based on a conference paper given in March 1999, in Saipan, U.S. Commonwealth of the

Northern Mariana Islands (CNMI), at a conference entitled "Planning for the CNMI's Economic Future." It recounts our efforts to improve knowledge of the economic situation in the Northern Marianas. The second article analyzes how aging populations are forcing Asian countries to rethink their old-age pension systems.

National Income Accounts in the Northern Mariana Islands

Marc Rubin

Introduction and Summary

In September 1998, the United States Department of Interior, Office of Insular Affairs engaged the International Programs Center (IPC) to measure and evaluate baseline economic conditions in the U.S. Commonwealth of the Northern Mariana Islands (CNMI). IPC focused on using existing data sets, primarily the 1997 Economic Census and the 1998 Survey of Household Income and Expenditures. From these, we produced estimates of Gross Domestic Product (GDP) and the distribution of value added (VA) by major Industry ID group (corresponding to Standard Industrial Classification (SIC) categories). No attempts were made to break new methodological ground when data limitations became severe. Instead, problems were circumvented by applying simple imputation rules based upon the technological relationships in the 1992 U.S. Benchmark Input-Output Accounts.

GDP probably was in the range of \$854,812,000 – \$1,007,131,000 in 1997. This indicates a high income economy which produced \$13,406 – \$15,794 worth of goods and services for each of its 63,765 residents.

Many questions about the nature and dimensions of the CNMI economic baseline remain unanswered. Aside from the imprecision of our measurements, we do not know the size of disposable personal income or how it is distributed. Moreover, we cannot distinguish between the living standards of CNMI born residents, who are United States' citizens, and foreign guest workers. Thus, little can be said about individual welfare and the poor working conditions that have been

the focus of recent media attention. These and similar questions can only be addressed when more complete national accounts are available. Towards this end, we note that some of the necessary data are already being gathered, while others await resources and a directive.

I. National Income Accounting: An Overview

National income and product accounting (NIPA) is the basic technique for measuring standard of living. The methodology underlying these accounts has a long history tracing back to the pioneering works of Simon Kuznets, Arthur Bowley, Josiah Stamp, Colin Clark, and others. The principles these researchers proposed over 60 years ago produce a systematic, quantitative description of economic activity covering suitably classified transaction aggregates. Since each transaction aggregate is recorded twice (as in double entry bookkeeping), the accounts provide a convenient and self-consistent method for studying income and spending behavior. What follows is a summary of basic NIPA principles as described by Abraham.¹

National income statistics describe and explain broad features of the economy and its underlying trends; identify pathways for altering levels of production, employment, and implied distribution of benefits among competing population groups; and implement and test economic theories or models that aim to explain or forecast economic behavior.

¹ See William I. Abraham, *National Income and Economic Accounting*, Prentice Hall, Inc., Englewood Cliffs, New Jersey, 1969, chapters 2 and 3.

By definition, national income measures the money value of the goods and services available to the nation from economic activity. There are three approaches to measuring this. The first encompasses the value of output for all goods and services produced in the economy, net of indirect taxes and subsidies, and corrected for inter-industry sales, to avoid double counting (value added, output approach). The second method equates national income with the sum of incomes paid to households in return for their productive services, plus profits retained by firms as reserves (income approach). Finally, national income can be viewed as the sum of expenditures on consumer and investment goods, government expenditure, and net exports (expenditure by foreigners on home country exports less home country expenditures on imports) (expenditure approach).

The output approach aggregates the sum of values added at each stage of production by the industries and productive enterprises in the country. The sum of these values gives GDP at factor cost which, after a similar adjustment to include net property income from abroad, gives gross national product (GNP). In the United States, the information for this estimation comes from the various quinquennial economic censuses.

The income approach to measuring national income involves the estimation of five broad income categories: compensation of employees, proprietors' income, rental income of persons, corporate profits, and net interest. Not all incomes are included in this measurement; only those of residents (corporate and individual) which derive directly from the current production of goods and services are aggregated. In summing the incomes of factors of production, this calculation necessarily excludes all incomes

which cannot be regarded as payment for current services to production (such as transfer income). The sum of all factor incomes gives gross domestic income which, once adjusted for stock appreciation, gives gross domestic product at factor cost.

Finally, the expenditure approach aggregates consumption and investment expenditures to obtain total domestic expenditure at market prices. It aggregates only the value of final purchases and excludes all intermediate goods. However, since final expenditures at market price include the effects of taxes and subsidies and expenditures on imports, while excluding the value of exports, all must be taken into account to derive GNP.

In estimating the components of gross national expenditure, information on both production and spending is used. In the United States, the largest component, personal consumption expenditure, is collected through the Censuses of Manufactures and Trade. These data are used for tracing commodities from producers to consumers and for expressing the retail value of these goods. With regard to gross private domestic investment (private outlays on new construction and equipment and the change in business inventories), some of the more important sources of data for this class of expenditure are the Bureau of Labor Statistics (for construction activity) and the Bureau of the Census (for equipment purchases, see the Annual Survey of Manufactures). Estimates of government expenditures on goods and services are based on budgetary statistics. Finally, data for net exports of goods and services are compiled by the Bureau of Economic Analysis (BEA) and the Bureau of the Census.

In principle, each method of measurement should give the same result. Specifically, expenditures on goods and services must equal their sales value, which must equal the incomes paid out as wages, salaries, interest, dividends, rent, and undistributed profits. However, because of measurement problems, the three separate estimates of national income typically diverge and the value finally adopted is a compromise estimate of the three. NIPA accounts are usually represented as a system in which the following activities are distinguished: production, consumption, capital accumulation, and transactions with the rest of the world (Table1).

Based upon this accounting scheme, basic macro-economic equilibrium conditions can be examined and used as initial points of departure for income multiplier/impact analyses. While potential output depends on the volume of resources and their usage, actual output depends on aggregate demand. If spending by final buyers is deficient in relation to potential sales, some land, labor, and capital services will be idled. Producers trying to provide more goods and services than buyers demand will encounter unintended inventory build-up and subsequent falling profits—reducing production. Thus, while a rise in output always is matched by an equal rise in income, spending may not be sufficient to sustain that rise. Whatever the level of output and employment, equilibrium is maintained only if aggregate spending provides a market. Thus savings, a leakage out of the income stream, must be exactly offset by investment. The implication of this equality provides the basis for modeling how changes in aggregate demand affect the overall level of economic activity.

In the context of the conference in Saipan, analysts developed economic impact multipliers for the garment and hospitality

industries conditioned on the underlying equality of savings and investment. The conceptual linkage between the NIPA and this other research is simple to illustrate. Specifically, in a simple closed economy without government:

$$Y = C + I$$

$$S = Y - C$$

$$S = I$$

For the open economy with government, the expression becomes more complex since income is either consumed, saved or paid in taxes:

$$Y = C + I + G + (X - M) \text{ and}$$

$$Y = C + S + T$$

Where:

Y is national income

C is consumption

I is investment

S is savings

G is government spending

(X-M) is net exports

T is taxes

Assuming the absence of transfers to foreigners, equilibrium in the goods market reduces to:

$$S + T = I + G + (X - M)$$

Using the data in Table1, the numerical equilibrium condition can be represented as:

$$S(40) + T(20 + 10 + 20) =$$

$$I(40) + G(50) + (X - M)(40 - 40)$$

Finally, note that since $S = I$, $\Delta S = \Delta I$ and by implication $\Delta Y / \Delta I = \Delta Y / \Delta S = 1 / \Delta S / \Delta Y$. The latter expression is the simple income multiplier.

Where:

ΔS is change in savings

ΔI is change in investment

ΔY is change in national income

**Table 1. - National Income and Product Accounts (Illustrative)
(Billions of dollars)**

I. National Income and Product Account (Production)

Wages and salaries	135	Personal consumption expenditures	130
Profits		Gross private domestic investment	30
Profits tax	20	Fixed investment	25
Dividends paid (net)	15	Change in business inventories	5
Undistributed profits	25	Net exports of goods and services	15
Net interest	5	Exports	40
Indirect business taxes	10	Less: Imports	25
Capital consumption allowances	10	Government purchases of goods and services	45
Charges against gross national product	220	Gross national product	220

II. Personal Income and Outlay Account (Consumption)

Personal tax payments	20	Wages and salaries	135
Personal consumption expenditures	130	Dividends	15
Interest paid	10	Personal interest income	15
Personal saving	15	Transfer payments	10
Personal taxes, outlays, and saving	175	Personal income	175

III. Government Receipts and Expenditures Account (Consumption)

Purchases of goods and services	45	Personal tax payments	20
Transfer payments		Indirect business taxes	10
To persons	10	Profits tax	20
To foreigners	2		
Net interest paid	3		
Surplus or deficit(-)	-10		
Government expenditures and surplus	50	Government receipts	50

IV. Foreign Transactions Account

Exports of goods and services	40	Imports of goods and services	25
		Transfer payments	2
		Interest received from government	3
		Net foreign investment	10
Receipts from foreigners	40	Payments to foreigners	40

V. Gross Savings and Investment Account (Capital Accumulation)

Gross private domestic investment	30	Undistributed profits	25
Net foreign investment	10	Personal savings	15
		Government surplus	10
		Capital consumption allowances	10
Gross investment	40	Gross saving	40

Source: U.S. Department of Commerce, 1985, p.11.

II. Methodological Overview and Calculation of CNMI GDP

As part of a congressionally mandated study, IPC was asked to develop estimates of value added by industrial sector and GDP for the CNMI. The methodology to produce these estimates is fairly straightforward when complete sets of data are available. Although information is limited for the CNMI, usable measurements can be developed after certain assumptions are made. In the previous section, we noted that GNP can conceptually be estimated in three different ways. Due to the lack of data on net exports and corporate profits, both the expenditure and income approaches are ruled out at present. This leaves the inter-industry production methodology as the only viable algorithm. GNP is, by definition, equal to the sum of values added² taken across all sectors of the economy. While the 1997 CNMI Economic Census does not contain all the information necessary to calculate this economic statistic, it does provide starting data on the dollar volume of business (questionnaire OA-9883, item 6) and the dollar value of purchases (item 12). Conceptually, *item 6* approximates the theoretically required shipments and other receipts. *Item 12* is roughly equivalent to selected costs for materials and services. Thus to calculate value added, one proceeds by taking the difference of CNMI items 6 and 12, and then using this quantity as a proxy for the true expression. Further adjustments are necessary: first, correction is made for

“finished goods” and “work-in-progress” inventory change and then a correction for the value of purchased services. The latter adjustment is made to bring the Census definition of value added into conformity with the BEA definition used for national income accounting purposes. Note that the CNMI census does not address the question of inventory change or purchased services, thus imputations must be made. Lacking supplemental data sets, information from the U.S. Census of Manufactures, U.S. NIPA, and the benchmark U.S. Input-Output table can be used to develop scaling factors per dollar of value added, sales, and payroll. However, these adjusted figures are incomplete since they do not include value added originating in government, agriculture, fishing, forestry, communications and utilities, finance, banking, and real estate. They also are gross of capital expenditures for new buildings and machinery.

Once all adjustments are made, the figures for value added by sector and overall GDP (net of the missing sectoral values added) are used as benchmarks for a second round of calculations. Following standard System of National Accounts (SNA) methodology, GDP can also be built up from the following identity: $GDP = VA = \text{compensation of employees} + \text{indirect business taxes} + \text{“other value added.”}$ To implement this definition, payroll data from the 1997 Census and the CNMI Department of Finance are first compiled and then, as necessary, scaled up to total compensation using benefits data found in the Statistical Abstract of the U.S. (Table 701)³ and scaling factors for the CNMI found in the “Hay

² The Bureau of the Census measures value added in manufacturing by subtracting the cost of materials, supplies, containers, fuels, purchased electricity, and contract work from the value of shipments. This figure is then adjusted by the addition of value added by merchandising operations plus the net change in finished goods and work in process inventories.

³ U.S. Bureau of the Census, *Statistical Abstract of the United States: 1998* (118th edition.) Washington, DC, 1998, p. 439.

Report.”⁴ Next, data for indirect business taxes by sector of the economy are compiled from revenue audits provided by the CNMI government. Finally, an estimate of “other value added” (OVA) is developed. By definition:

OVA = total output (sales) – total intermediate inputs – employee compensation – indirect business taxes.⁵

In this residual form, the expression $GDP = VA = \text{compensation of employees} + \text{indirect business taxes} + \text{“other value added”}$ is a tautology since substitution of terms produces the identity equation where value added = value added. Nevertheless, the framework is instructive, since it indicates that the circularity can be avoided if a direct estimate of OVA is built up from the factor income side and substituted for the residual expression. At present, we are working towards this end by seeking information on corporate profits and personal income. However, this phase of the research is still far from complete. Thus for now, imputation is used to produce a second set of independent estimates. Finally, we try to estimate the missing elements of GDP originating in government; agriculture, forestry, and fishing; communications and utilities; and finance, insurance, and real estate from wage and salary data derived from the 1998 Survey of Household Income and Expenditures (HIES) and CNMI budget records.

⁴ Hay Group, *Minimum Wage Analysis for the Commonwealth of the Northern Mariana Islands: Final Report*, 1997, p. V-27.

⁵ This is actually net indirect taxes which represents the value of indirect taxes collected minus the value of subsidies paid by the government to various establishments. Hard data on subsidies in the CNMI are not available at this time, but are believed to be negligible.

The first GDP calculation (Value Added 1) is \$720,860,000 (Table 2). The methodology employs the simple definition of value added alluded to earlier in the second paragraph of this section. Prior to performing the calculation, imputation is necessary to account for missing purchase data. Of the 1,232 establishments covered in the Census, only 810 report both sales and purchases. These 810 matched pairs are used to develop sectoral sales to purchase ratios. The latter are applied to total reported (population) sales data to derive estimated sectoral purchases. The values added of wholesale and retail trade are replaced by the corresponding entries in Table 6, Value Added 5. The rationale behind this substitution will become apparent when Table 6 is discussed.

Table 3 reports estimates for value added in the 810 establishment matched pair sample, calculates a value added to payroll ratio, and then scales up the total reported (population) payroll to GDP using the imputing ratio. Value Added 2 is \$755,577,000 where the figure is net of government; communication and utilities; finance, insurance, and real estate; and agriculture, forestry, and fishing. As in the case of Value Added 1, substitute values are used for wholesale and retail trade.

Table 4 presents an estimate of GDP (Value Added 3) based on the modified factor income approach. Payroll data for the Industry ID product groups of interest are reported in the 1997 Economic Census. Aggregate indirect business taxes appear in the CNMI Single Audit Report of Local Revenues. To calculate value added by Industry ID product group, assignment of tax revenues to individual ID codes is made in proportion to the given industry’s share of total sales where the latter is taken across all establishments in the Census. Finally, to

Table 2. Partial Gross Domestic Product (\$000) in CNMI: 1997

Industry ID	Sample Sales (S)	Sample Purchases (P)	Estimated S/P	Total Reported Sales	Estimated Purchases	Value Added ¹
1 Food	**D	**D	0.63	5,505	3,494	2,011
2 Apparel	633,625	378,469	0.60	699,631	417,895	281,736
3 Print/Pub.	4,736	1,720	0.36	4,976	1,807	3,169
4 Stone, Clay	**D	**D	0.68	21,440	14,671	6,769
5 Other Man.	28,967	20,847	0.72	30,528	21,970	8,558
6 Constr.	55,841	27,239	0.49	87,942	42,898	45,044
7 Transp.	39,779	16,688	0.42	67,367	28,262	39,105
8 Wholesale	188,010	134,430	0.72	222,655	159,202	*16,819
9 Eat/Drink	37,551	14,899	0.40	55,440	21,997	33,443
10 Other Ret.	424,654	261,462	0.62	514,826	316,981	*69,793
11 Hotels	109,888	47,561	0.43	195,159	84,467	110,692
12 Other Ser.	140,435	58,267	0.41	177,271	73,550	103,721
TOTAL	1,680,113	972,696	0.58	2,082,740	1,205,796	720,860

Where:

- | | |
|---------------------------|--------------------------------------|
| 1 Food Products | 7 Transportation Services |
| 2 Apparel | 8 Wholesale Trade |
| 3 Printing and Publishing | 9 Eating and Drinking Establishments |
| 4 Stone, Clay and Glass | 10 Other Retail Establishments |
| 5 Other Manufacturing | 11 Hotels/Lodging |
| 6 Construction | 12 Other Selected Service Industries |

* Estimate is from Value Added 5.

** D means nondisclosure

Table 3. Partial Gross Domestic Product (\$000) in CNMI: 1997

Industry ID	Sample Payroll (P)	Sample Sales	Sample Purchases	Sample Value Added (VA)	VA/P	Total Reported Payroll	Value Added ²
1 Food	**D	**D	**D	**D	1.50	1,346	2,013
2 Apparel	108,938	633,625	378,469	255,156	2.34	133,243	312,083
3 Print/Pub.	1,362	4,736	1,720	3,016	2.21	1,422	3,149
4 Stone, Clay	**D	**D	**D	**D	1.55	3,945	6,132
5 Other Man.	6,258	28,967	20,847	8,120	1.30	6,627	8,599
6 Constr.	15,150	55,841	27,239	28,602	1.89	21,471	40,536
7 Transp.	11,788	39,779	16,688	23,091	1.96	17,561	35,725
8 Wholesale	7,398	188,010	134,430	53,580	7.24	9,417	*16,819
9 Eat/Drink	8,352	37,551	14,899	22,652	2.71	12,369	33,547
10 Other Ret.	34,348	424,654	261,462	163,192	4.75	41,817	*69,793
11 Hotels	18,639	109,888	47,561	62,327	3.34	34,446	115,184
12 Other Ser.	28,910	140,435	58,267	82,168	2.84	39,405	111,997
TOTAL	244,739	1,680,113	972,696	707,417	2.89	323,069	755,577

* Estimate is from Value Added 5.

** D means nondisclosure

compensate for the lack of data on factor income, the estimate of “other value added” is imputed. Using the 1992 U.S. Benchmark Input-Output (I-O) tables, ratios for “other value added as a percent of total output” are computed by the SIC categories corresponding to the Industry ID’s.⁶ These scale factors then are applied to the relevant CNMI sales figures to derive the corresponding OVA. Summing payroll, indirect business taxes, and OVA produces a GDP of \$718,254,000. As in Value Added 1 and 2, this figure is net of the missing economic activity and makes substitutions for wholesale and retail trade.

Table 5 replaces the sales based OVA estimates of Table 4 with payroll based OVA figures. Here the imputation involves scaling up total (population) payroll to OVA using ratios for “other value added per dollar of compensation” found in the 1992 U.S. Benchmark I-O tables.⁷ Switching the imputation procedure lowers GDP to \$591,465,000 (Value Added 4).

The final partial “GDP” estimates are reported in Table 6. Again, scaling factors convert payroll and sales to value added. The imputation factors are the U.S. ratios representing SIC values added per dollar of compensation or output.⁸ Value Added 5 (scaled payroll) deserves special attention since it is used as a baseline estimate. Given established federal government procedures for collecting and reporting wages and salaries, these figures generally are regarded as more accurate and reliable than their associated Industry ID (SIC) sales or

purchase counterparts. From the \$544,323,000 of identified value added, \$86,612,000 originates in wholesale and retail trade. The corresponding payroll for these two Industry ID groups is \$51,234,000. By way of contrast, mechanical extrapolation of sales and purchase data suggests sectoral value added of up to \$511,088,000. This latter figure is too high to be credible, given the payroll level. Most likely, this problem of inflation arises because the core algorithm (refer to Value Added 1, Table 2) may be inappropriate for measurements in the wholesale and retail trade sectors.⁹ The correct procedure to calculate value added here is to subtract the cost of goods sold from output. Unfortunately, cost of goods sold data were not developed in the 1997 census; and until such definitive information becomes available, the prudent course of action requires using estimates of value added that are commensurate with payroll. Finally, when U.S. output to value added ratios are used to extrapolate GDP, the level of economic activity rises by over \$100,000,000 to \$675,099,000 (Value Added 6).

In sum, 1997 Economic Census estimates of partial “GDP” range from \$544,323,000 to \$755,577,000. Since the sales-based figures are gross of purchased services, a correction factor is applied (0.078)¹⁰ to the upper limit, yielding a revised

⁶ Ann M. Lawson, “Benchmark Input-Output Accounts for the U.S. Economy, 1992.” *Survey of Current Business*, Vol. 77, No.11, November 1997, p. 82.

⁷ *Ibid.* p. 82.

⁸ *Ibid.* p. 82.

⁹ Such problems may have been anticipated by the Census Bureau when they wrote “Figures may contain duplication since the products of some industries are used as materials for others and work (and receipts) of one firm may be subcontracted to other firms and included in the other firm’s receipts”. See *1997 Economic Census of Outlying Areas*, Appendix A p. A-1.

¹⁰ Ann M. Lawson, *Survey of Current Business*, loc.cit.

Table 4. Partial Gross Domestic Product (\$000) in CNMI: 1997

Industry ID	Total Reported Sales	Total Reported Payroll	Other Value Added/Sales	Other Value Added	Indirect Business Taxes	Value Added 3
1 Food	5,505	1,346	0.14	771	410	2,527
2 Apparel	699,631	133,243	0.07	48,974	52,115	234,333
3 Print/Pub.	4,976	1,422	0.22	1,095	371	2,887
4 Stone, Clay	21,440	3,945	0.17	3,645	1,597	9,187
5 Other Man.	30,528	6,627	0.09	2,748	2,274	11,649
6 Constr.	87,942	21,471	0.09	7,915	6,551	35,937
7 Transp.	67,367	17,561	0.24	16,168	5,018	38,747
8 Wholesale	222,655	9,417	0.12	26,719	16,586	*16,819
9 Eat/Drink	55,440	12,369	0.08	4,435	4,130	20,934
10 Other Ret.	514,826	41,817	0.13	66,927	38,349	*69,793
11 Hotels	195,159	34,446	0.12	23,419	14,537	72,402
12 Other Ser.	177,271	39,405	0.21	37,277	13,205	89,837
TOTAL	2,082,740	323,069		240,042	155,143	718,254

*Estimate is from Value Added 5.

Table 5. Partial Gross Domestic Product (\$000) in CNMI: 1997

Industry ID	Total Reported Sales	Total Reported Payroll	Other Value Added/Payroll	Other Value Added	Indirect Business Taxes	Value Added 4
1 Food	5,505	1,346	1.05	1,411	410	3,167
2 Apparel	699,631	133,243	0.25	33,642	52,115	219,000
3 Print/Pub.	4,976	1,422	0.70	993	371	2,786
4 Stone, Clay	21,440	3,945	0.58	2,280	1,597	7,822
5 Other Man.	30,528	6,627	0.42	2,767	2,274	11,668
6 Constr.	87,942	21,471	0.25	5,401	6,551	33,423
7 Transp.	67,367	17,561	0.74	12,988	5,018	35,567
8 Wholesale	222,655	9,417	0.29	2,729	16,586	28,731
9 Eat/Drink	55,440	12,369	0.24	2,955	4,130	19,454
10 Other Ret.	514,826	41,817	0.32	13,543	38,349	93,709
11 Hotels	195,159	34,446	0.34	11,625	14,537	60,608
12 Other Ser.	177,271	39,405	0.58	22,920	13,205	75,529
TOTAL	2,082,740	323,069		113,253	155,143	591,465

Table 6. Partial Gross Domestic Product (\$000) in CNMI: 1997

Industry ID	US Scale Factor 1	Total Reported Payroll	Value Added 5	US Scale Factor 2	Total Reported Sales	Value Added 6
1 Food	1.835	1,346	2,470	0.31	5,505	1,685
2 Apparel	1.835	133,243	244,501	0.35	699,631	243,527
3 Print/Pub.	1.435	1,422	2,041	0.55	4,976	2,723
4 Stone, Clay	1.435	3,945	5,661	0.48	21,440	10,241
5 Other Man.	1.587	6,627	10,517	0.35	30,528	10,614
6 Constr.	1.462	21,471	31,391	0.44	87,942	39,024
7 Transp.	2.247	17,561	39,460	0.58	67,367	39,327
8 Wholesale	1.786	9,417	16,819	0.70	222,655	*16,819
9 Eat/Drink	1.669	12,369	20,644	0.48	55,440	26,593
10 Other Ret.	1.669	41,817	69,793	0.69	514,826	*69,793
11 Hotels	1.368	34,446	47,122	0.56	195,159	109,793
12 Other Ser.	1.368	39,405	53,906	0.59	177,271	104,960
TOTAL		323,069	544,323		2,082,740	675,099

*Estimate is from Value Added 5.

Table 7. Missing Sector Gross Domestic Product (\$000) in CNMI: 1997

Industry ID	Wages and Salaries	Benefit Markup	Estimated Compensation	Value Added/Comp.	Value Added 7
13 Agric. Etc.	148	1	148	3.28	484
14 Comm./Util.	9,006	1.345	12,114	2.25	27,222
15 Finance etc.	12,679	1.345	17,053	4.13	70,466
Government	126,947	1.435	182,168	1.17	212,317
TOTAL	148,779		211,482		310,489

Where:

- 13 Agriculture, Forestry, and Fishing
- 14 Communications and Utilities
- 15 Finance, Insurance, and Real Estate

GDP interval between \$544,323,000 and \$696,642,000.

Missing economic activity must be accounted for to improve GDP estimates. Wage and salary data from the 1998 Household Income and Expenditure Survey are used to generate values added for government; communication and utilities; finance, insurance, and real estate; and agriculture, forestry, and fishing. The first step is to add benefits to wages and salaries to produce total compensation. Compensation then is scaled up to value added using scale factors from the U.S. I-O tables. Following previous methodology, the estimates in Table 7 are obtained. Given available information, our calculations indicate that 1997 GDP, inclusive of all major sectors of economic activity and rounded off to the nearest thousand dollars, ranges between \$854,812,000 and \$1,007,131,000 (\$13,406- \$15,794 per capita). This places CNMI in the World Bank's high income category.¹¹ Even so, many questions remain about the nature and dimensions of the CNMI economic baseline. Aside from the estimates' imprecision, we do not know disposable personal income or how equally it is distributed. Moreover, we cannot distinguish the living standards of CNMI born residents, who are U.S. citizens, from foreign guest workers. Finally, nothing is said about the cost of living in the CNMI versus either the U.S. mainland or other comparator places. Thus, little can be said about individual welfare. Such questions require more complete national accounts.

Caveats

Some of the sources of potential error in our key assumptions are easy to spot. First, survey-based estimates of income understate full income enumeration, such as those developed in the NIPA. Gottschalk and Smeeding found that the survey capture rate was only about 90 percent.¹² Thus the \$310 million in value added for the missing sectors (Table 7) could be understated by up to \$34 million. Second, the markup from wages and salaries to compensation is set at 34.5 percent using a figure for private industry in the U.S. Statistical Abstract.¹³ According to the Hay Report,¹⁴ private sector benefits range from 24.1 to 35.8 percent of salaries. If the lower figure is correct, Value Added 7 is overstated by \$2 million. Third, several of our imputations substitute sales data for output when applying scale factors to generate value added (Value Added 3 and 6). This substitution is legitimate only after account is taken of finished goods and work-in-progress inventory change, resales, contract work, and other services rendered. We have no current information on inventories; however, if the patterns in the 1992 Puerto Rican Economic Census are indicative, then the correction needed is minor. The Puerto Rican inventories in question are under three percent of shipments, and year-to-year fluctuations of this series are less than five percent. Though the direction of adjustment is unclear for the CNMI, it is likely to be under \$1 million. Fourth, value added is scaled back by 7.8

¹¹ See World Development Report 1998/1999, p.232. Per capita GDP above \$9656 is considered high income. Without elaboration, the World Bank report asserts that CNMI per capita GDP is above this level. For purposes of contrast, note that 1997 per capita GDP in the U.S. was \$28,740 and \$15,720 in Spain.

¹² Gottschalk and Smeeding, "Cross National Comparisons of Earnings and Income Inequality," *Journal of Economic Literature*, Volume XXXV, No.2, June 1997, p. 640. The authors' assessment refers to six advanced western economies.

¹³ U.S. Bureau of the Census, *U.S. Statistical Abstract*, loc.cit.

¹⁴ Hay Group, *Minimum Wage*, loc.cit.

percent to correct for the inclusion of purchased services. Data from the CNMI Economic Census allow us to identify purchased services of \$57,569,000. Given the magnitudes of Value Added 2 and 6, the implied correction factor ranges between 7.6 and 8.5 percent. At worst, GDP is overstated by \$5 million. Fifth, the calculated distribution of indirect business taxes puts the burden solely on the industries reporting sales in the census. If the industries in Table 7 had been part of the census, the maximum individual burden reduction for a reporting industry would have been no more than 8.3 percent or \$4 million. Finally, no attempt has been made to impute a value to home ownership.

The real unknown in these exercises is the legitimacy of applying U.S. technological relationships, as embodied in the 1992 U.S. I-O table, to the CNMI's economy. Unfortunately, we have no way to measure the distortion.

III. Strategy for the Future

The previous discussion indicates that there is nontrivial uncertainty in the measurement of CNMI GDP. To improve estimates, additional data will have to be collected and imputation avoided wherever feasible. Reduction of estimate uncertainty in the United States is accomplished by employing multiple methodologies to produce competing estimates. "Truth" is reached through reconciliation. This requires vast amounts of information and devoting considerable manpower to data manipulation.

The CNMI may lack the resources to mount such an effort, but steps can be taken to begin filling the gaps. For instance, rather than impute the distribution of indirect business taxes, collection data available at the Department of Finance should be used to refine the Value Added 3 and 4 estimates.

More importantly, if the survey of establishments becomes an annual exercise, the value added methodology developed above can be fine tuned and reapplied. Based upon the just-completed exercise, the value added calculations using the definitions of sales and purchases found in questionnaire OA-9883 are suspect especially for wholesale and retail trade. The only way around this problem is to use a different questionnaire, such as the OA-9820 used in Puerto Rico, and gather the information in a more usable format.

A second set of independent estimates is needed to challenge the results of the value added method. Some pieces already are in place to perform a factor income based calculation. The quinquennial CNMI Census of Population and Housing contains most of the information needed to estimate personal income. The annual survey of Household Income and Expenditures collects complete data on wages and salaries. Corporate profits data are compiled on IRS form 1120F and are retained by the Department of Finance. Access to these data is critical for the improvement of GDP estimates. The methodology to measure GDP under these circumstances is well understood (Table 8).

More specifically, one can build up an estimate of National Income (3) starting with figures on personal income (4) in the 1995 Census of Population and Housing. To move from (4) to (3), data on categories (3.1-3.8) are needed. Note that personal income as defined in the Census is not the same as compensation of employees found in the NIPA. The latter includes employer contributions for social insurance and other labor income (pensions, profit sharing, group health, and life insurance). Tracking down corporate social security contributions should be possible; however, it is likely that other

labor incomes will have to be imputed or ignored.

Most such payments must be imputed or ignored.

Table 8. Reconciliation of GNP and Personal Income

- 1. Gross National Product**
 - 1.1. Less: Capital consumption allowances with capital consumption adjustment
- 2. Equals: Net National Product**
 - 2.1. Less: Indirect business taxes and non tax liability
 - 2.2. Plus: Subsidies less current surplus of government enterprises
- 3. Equals: National Income**
 - 3.1. Less: Corporate profits with inventory valuation and capital consumption adjustments
 - 3.2. Less: Net Interest
 - 3.3. Less: Contributions for social insurance
 - 3.4. Less: Wage accruals less disbursements (con't.)
 - 3.5. Plus: Government transfer payments to persons
 - 3.6. Plus: Personal interest income
 - 3.7. Plus: Personal dividend income
 - 3.8. Plus: Business transfer payments
- 4. Equals: Personal Income**

Business transfer payments (item 3.8) are made to people or the "rest of the world" (ROW). They consist of: insurance payouts for automobile mishaps, medical malpractice awards, corporate donations to nonprofit institutions serving individuals, income taxes paid by domestic business to foreign governments on foreign income, and "other."

Items 3.7, 3.6, and 3.5, (personal dividend and interest income, and government transfer payments to persons) are included in the census definition of personal income. Item 3.4 also is available from the census since accruals can be reasonably approximated by wage disbursements (the difference between accruals and disbursements is less than 1/10 of one percent in the U.S. NIPA).

Item 3.3, contributions for social insurance, will require U.S. tax return/FICA data for individuals and corporations. Given the matching requirement in the law, corporate contributions can be assumed to equal employee contributions in covered industries. It also may be possible to get this latter information directly from the Social Security Administration, if we can provide them with a list of corporate ID numbers.

The estimation of item 3.2, net interest, will involve considerable guesswork. Monetary interest paid and received are recorded on corporate tax returns filed with the IRS. However, significant imputations must be made to cover the empirical value of service provided by banks and nondepository institutions, as well as the interest earned by life insurance companies and noninsured pension plans on participant reserves. Various organizations in Washington -- the Federal Deposit Insurance Corporation, Departments of Labor and Treasury, and the American Council of Life Insurance -- collect information which bears on these questions from the perspective of the U.S. economy as a whole. These agencies may be able to suggest general rules for adaptation to CNMI circumstances.

The biggest part of the puzzle which is missing from census data is corporate

profits (item 3.1). We cannot calculate this directly, given the need for capital consumption and inventory valuation adjustment. The best we can hope for is to take profit before taxes, as found in the corporate tax returns to the IRS, and apply ratios from the aggregate U.S. data to get an estimate of the adjusted figure. As the estimate of national income will be a rough approximation, our final numbers must be given as a range, reflecting this uncertainty. As more data are collected, we should be able to come up with more precise figures.

Results from the first two measurement exercises can be challenged by GDP estimates derived from final expenditures. For this approach to work, the CNMI must develop estimates of personal consumption expenditures, gross private domestic investment, net exports of goods and services, and government consumption. Data on personal consumption expenditures in the Survey of Household Income and Expenditures can probably form the core of the first category. We also know that government expenditures are available from the Department of Finance Single Audit reports. The situation regarding investment and net exports is not currently known.

The above comments are incomplete. For a more balanced assessment, we recommend thoroughly reviewing data sources based upon the requirements identified in a more nearly ideal system. Such a process could begin with an examination of how a former U.S. territory, the State of Hawaii, put together its estimates. For further information on these accounts, contact the Hawaiian Department of Business, Economic Development & Tourism, Research and Analysis Division.

References

- Abraham, William I. 1969. *National Income and Economic Accounting*, Prentice Hall, Inc. Englewood Cliffs, New Jersey.
- Gottschalk, Peter and Smeeding, Timothy M. 1997. "Cross-National Comparisons of Earnings and Income Inequality." *Journal of Economic Literature*, Volume XXXV, No. 2, June, pp.633-687.
- Hay Group. 1997. *Minimum Wage Analysis for the Commonwealth of the Northern Mariana Islands: Final Report*, April.
- Lawson, Ann M. 1997. "Benchmark Input-Output Accounts for the U.S. Economy, 1992." *Survey of Current Business*, Vol. 77, November, pp.36-83.
- U.S. Bureau of the Census. 1999. *1997 Economic Census of Outlying Areas: Commonwealth of the Northern Mariana Islands*, Washington, DC.
- U.S. Bureau of the Census. 1999. *1998 Survey of Household Income and Expenditures: Commonwealth of the Northern Mariana Islands*, Washington, DC.
- U.S. Bureau of the Census. 1998. *Statistical Abstract of the United States: 1998* (118th edition.) Washington, DC.
- U.S. Department of Commerce. 1985. *An Introduction to National Income Accounting*, Methodology Papers: U.S. National Income and Product Accounts, March.
-

World Bank. 1997. *World Development Report 1997*, Washington, DC.

World Bank. 1998/1999. *World Development Report 1998/1999*, Washington, DC.

Pension Management and Reform in Asia: An Overview¹⁵

Loraine A. West and Kevin Kinsella

Introduction

Pension reform has been something of a political hot potato in industrialized nations for the last two decades, but only recently has the decibel level of public debate risen. In most developing countries, concern with basic issues of economic growth, public health, and political development has deflected attention from the need to expand and, in many cases, reformulate national approaches to old-age security. The World Bank, in its 1994 report *Averting the Old Age Crisis*, issued a wake-up call that emphasized potential pitfalls associated with existing policies and programs in all nations. At least in part as a response to this call, a growing number of countries are recognizing the weaknesses and limitations of their existing old-age pension systems, and are beginning to undertake steps to reform these systems. Population aging and economic transformations are forcing developed and developing countries alike to examine the structure and financing of their pension programs. Some countries are taking an incremental approach to reform, while others have introduced sweeping changes.

Public pension programs in many industrialized countries were designed over 50 years ago and are no longer suitable to deal with present and future demographic realities. Declining birth rates and increasing life expectancies mean fewer workers supporting more retirees. Governments increasingly recognize that public pension schemes financed on a pay-as-you-go basis will be unable to deliver constant benefits to retirees in the future unless contributions from workers rise substantially (Espina, 1996).

While developed countries generally will face the ramifications of population aging in advance of developing countries, the latter will experience much more rapid growth of their elderly populations due to faster declines in birth rates and increases in life expectancy. Most of the world's older (60 and over) population now lives in developing countries, and within three decades, these nations will be home to 74 percent of the world's elderly. Population aging will place a strain on the economies of all countries because of the growing need for retirement benefits and the higher costs of elderly health care. Developing countries also are finding that informal old-age support systems, such as family and mutual aid societies, which are often the mainstay of their social security system, tend to weaken and lose their traditional effectiveness as development and urbanization advance.

Formal old-age pension programs in developing countries typically are limited to state workers. Funding comes from general revenue for government workers and from state-owned enterprise revenue for enterprise employees. As governments decide that it is no longer desirable to subsidize the inefficiencies of state-owned enterprises, and that these enterprises should compete in a market-oriented economy, the responsibility for providing social benefits needs to be shifted and new

¹⁵An expanded version of this report initially appeared in *NBR Executive Insight*, no. 11 (May 1998). Reprinted here with permission of the National Bureau of Asian Research (NBR), Seattle, Washington.

financing arrangements put in place. Establishing a social safety net with wide coverage can be critical to easing the pain of structural adjustment.

As countries strive to craft an old-age support system that will achieve multiple objectives, reform is leading to a new distribution of responsibilities among the government, enterprises, the community, and individuals. These objectives include enhancing economic growth, keeping labor costs competitive in the world market, and providing an adequate standard of living for the growing number of elderly. One change has been the increasing popularity of defined-contribution plans as opposed to the earlier dominance of defined-benefit plans. Defined-contribution plans have been embraced by private pension plans as well as public pension schemes. While defined-contribution pension plans shift the financial risk to the worker, these plans can often be tapped prior to retirement for major expenditures such as education and purchase of a house. Defined-contribution schemes with full funding are commonly viewed as more favorable for economic growth and more suitable for population aging (Gruat, 1997).

Another major direction of pension reform is toward private management and compulsory savings schemes. Chile has become the developing-country model for pension privatization (Schulz, 1993), and other Latin American nations have adopted aspects of the Chilean system. Variations on the privatization theme are likewise being instituted in parts of Eastern Europe and the former Soviet Union as these nations make the transition from command to market economies. Even in Europe and North America, where pension systems arguably have been most successful, there is mounting pressure to shift the emphasis more clearly toward private and compulsory arrangements.

Asian countries will experience the fastest population aging because these countries have seen the most rapid declines in birth rate. This rapid demographic transition will pose a challenge to these countries as they attempt to design an old-age protection system. Most Asian countries, however, have the advantage of strong traditions of familial and community support and very high saving rates. In addition, experience with a wide variety of formal pension programs, including national provident funds, social insurance schemes, occupational pensions, and life insurance, exists in the region. No country in Asia, however, is likely to find that its current old-age pension system will be able to see it through future economic transformations and rapid population aging.

This paper provides an overview of pension reform in China, Brunei, Hong Kong (SAR),¹⁶ Indonesia, Japan, Malaysia, the Philippines, Singapore, South Korea, Taiwan, and Thailand. Demographic trends in these jurisdictions, and the challenges they will present to old-age security systems in the future, are addressed first. Next, the paper discusses specific reforms that are being implemented or advocated. The paper concludes by identifying key issues and opportunities regarding the development of pension programs in these 11 economies.

I. Demographic Underpinnings of Pension Reform

As economies in East and Southeast Asia struggle with ongoing uncertainty, issues of employment, labor productivity, and financial restructuring tend to dominate social discourse. With immediate, sometimes day-to-day crises commanding the public spotlight, attention fades from less obvious, longer-term processes involving demographic

¹⁶Special Administrative Region

evolution and changing national health profiles. The effects of these processes, however, will have a substantial, tangible impact on how countries redefine and restructure their systems of old-age security.

One such long-term process is the demographic aging of population. The phenomenon of population aging has been well-publicized in the industrialized nations of Western Europe and North America. What is not well appreciated is the fact that most countries of East and Southeast Asia are aging far more rapidly than elsewhere in the world. In the West, there has been increasingly acrimonious debate over the distribution of social resources as the relative balance of older and younger persons changes. Shifting weights of younger and older people have an impact on the implicit social contract, and may strain (or conceivably strengthen) intergenerational solidarity. Social security systems that evolved under one set of demographic circumstances may require substantial restructuring in order to remain solvent and functional for successive generations. The challenge for nations of East and Southeast Asia is to tackle these issues in the context of extremely rapid demographic change.

Wide variation in national levels of aging

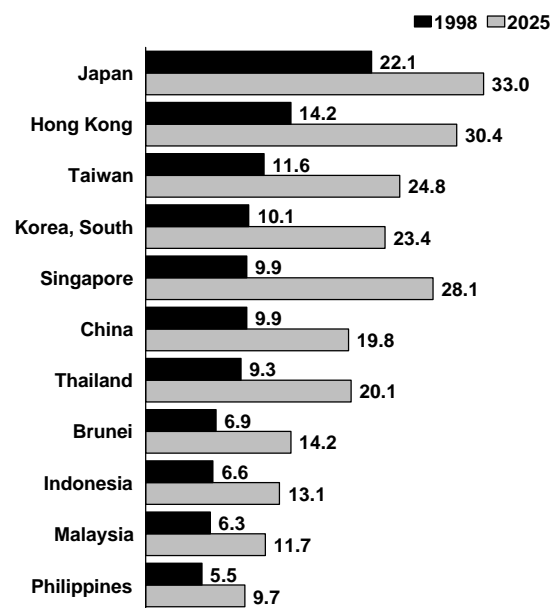
The extent of population aging in non-Western countries is most commonly expressed as the percent of all persons aged 60 or over. Among the nations of East and Southeast Asia, there are large differences in the level and pace of aging (Kinsella and Gist, 1995). With 22 percent of its population aged 60 or older, Japan currently is the “oldest” of all Asian nations, and demographically one of the oldest countries in the world (Italy stands as the world’s most aged major country with 23 percent of its populace aged 60 and over). In contrast, fewer than 6 percent of all persons in the

Philippines are among the ranks of the elderly. Most of the other Asian economies in this report have one-tenth or more of their populations in the 60-and-over category (Figure 1). With the exception of rapidly-aging Japan, these levels are lower than typically seen in North America and Europe, but generally higher than in other developing regions.

Rapid aging in East Asia

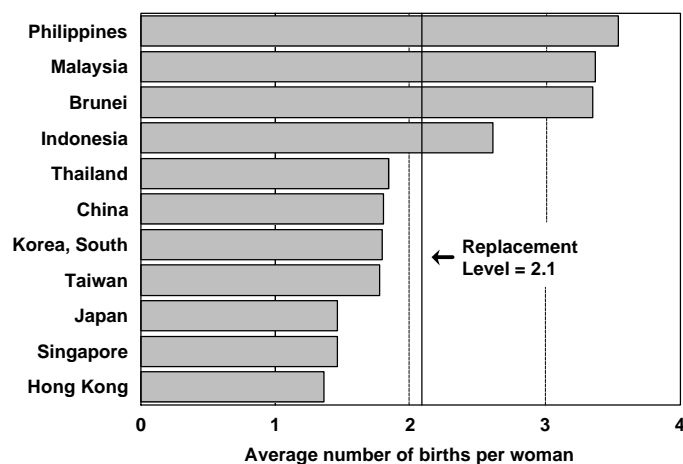
During the next three decades, the percentage of elderly is projected to rise substantially in all 11 jurisdictions. By 2025, one of every three Japanese will be at least 60 years old, and the percentage of elderly will approach or exceed 25 percent in Hong Kong (SAR), Singapore, South Korea, and Taiwan. What sets many East and Southeast Asian nations apart from the developed countries of Europe and North America is the speed of the demographic aging process. Population aging in the latter has been a gradual process that allowed societies and economies time to adapt to their demographic evolution. For instance, it took 89 years for the elderly (60+) share of total population to rise from 10 percent to 20 percent in Sweden. This same increase will be compressed into fewer than 30 years in most report economies (Figure 2), which suggests that Asian nations may not have the luxury of trial and error in terms of social program design. Fortunately for most economies in this report, the increase in the percentage of elderly is expected to be relatively modest during the next decade, and then accelerate after the year 2010 as the large cohorts of persons born after World War II enter the ranks of the elderly. Thus, countries throughout the region have a window of opportunity, albeit a rapidly-closing one, to plan for the demographic aging of their populations.

Figure 1. Percent of Population Aged 60 and Over: 1998 and 2025



Source: U.S. Bureau of the Census, International Programs Center, International Data Base.

Figure 2. Total Fertility Rate: 1998



Source: U.S. Bureau of the Census, International Programs Center, International Data Base.

Planning and marketing, of course, involve numbers more than percentages. Regardless of the pace of population aging in percentage terms, growth in absolute numbers of older persons is a more important barometer to those concerned with service delivery. There are, at present, some 185 million persons aged 60 and over in the 11 report jurisdictions, two-thirds of whom live in China. In the space of only 12 years (1998-2010), the number of elderly is likely to increase by 67 million (i.e., an increase of 36 percent). By 2025, the elderly total in these 11 economies is projected to reach 408 million. China alone will see its 60-and-over population explode from 123 million in 1998 to nearly 280 million by the year 2025.

The emergence of the oldest old

The term “oldest old” refers to those persons aged 75 and over. Currently, this group constitutes between 15 and 23 percent of all elderly in 8 of the 11 economies, with somewhat higher levels in Japan, Hong Kong (SAR), and Singapore. Over the next decade, demographers expect to see an “aging of the elderly,” in all 11 economies, meaning that the 75-and-over component will become a larger share of the total elderly. After 2010, the trend is less uniform, although Japan should experience a sustained increase in its oldest-old/elderly ratio; by the year 2025, nearly half of all elderly Japanese are likely to be among the oldest-old category.

Although the oldest old represent a small portion of all persons in a given society, this group typically is the fastest-growing segment of the population. Projections for Indonesia, for example, suggest that the total population size will increase by 35 percent during the period 1998-2025. The 60-and-over population, however, will increase more than 150 percent, while numbers of the oldest old will jump by 250 percent. In the 11 economies as a whole, the absolute number

of oldest old in 1998 (39 million) is expected to mushroom to 98 million by the year 2025. The numerical growth and increasing socioeconomic heterogeneity of the oldest old is challenging social planners to seek further knowledge about this group, since the oldest old consume disproportionate amounts of health and long-term care services (Suzman, Willis, and Manton, 1992).

The legacy of fertility

Although at first it may seem counterintuitive, past and current trends in fertility often have the greatest impact on the speed of population aging. Countries with high levels of fertility generally have high proportions of the population under age 20. Even if numbers of elderly are increasing in such countries, the elderly share of the population remains relatively small. In countries with low or steadily-decreasing levels of fertility, successive birth cohorts often shrink in size, and the elderly come to constitute a growing proportion of the total population.

Asian countries with large segments of traditionally Islamic or Catholic populations have significantly higher fertility than in other countries of the region. The total fertility rate in 1998 in the Philippines and Malaysia, for example, is about 3.5 births per woman. In contrast, 7 of the 11 economies in this report have a total fertility rate below the natural replacement level of 2.1 children per woman (Figure 2). Current rates in Hong Kong (SAR), Japan, and Singapore are among the lowest in the world, and have been below replacement level for many years.

Without significant immigration, persistence of low fertility becomes synonymous with population aging. Sustained low fertility has important implications for pension reform as the number of kin (especially children) available to support future generations of older

persons will be considerably smaller than is true today. Fewer children, coupled with a secular trend toward increased geographical mobility, will in all likelihood increase demand for state and/or private pension availability.

The increasing importance of mortality

Although fertility decline is usually the driving force behind changing population age structure, changes in mortality assume greater weight as countries reach lower levels of fertility (Caselli et al., 1987). Among the world's developing regions, the most dramatic improvements in mortality have been achieved in East Asia, where regional life expectancy at birth increased from less than 43 years in 1950 to more than 70 years in 1995. Singapore's life expectancy at birth rose 30 years in barely one generation, from 40 years in 1948 to 70 years in 1979. Japan presently enjoys the highest life expectancy of the world's countries—the average Japanese born in 1998 can expect to live a full 80 years. Women live longer on average than do men in all economies in this report, with the gender differential in life expectancy at birth ranging from 2.8 years in China to 7.6 years in South Korea.

After infant and childhood mortality reach low levels, which is the case with most of the economies in this report, improvements in average life expectancy are achieved primarily by declines in mortality among older segments of the population. Although reliable historical data on mortality are not widely available in Asia, rapid declines in old-age mortality have been recorded in several economies. In Taiwan and Singapore, for example, the death rate for persons aged 65-69 has dropped by more than half in the post-World War II period. The decline in Japan has been steeper still; the female mortality rate at ages 65 to 69 in 1994 was less than one-fourth the level in 1950. Major reductions can be seen at older

ages as well. As a consequence of these changes, life expectancy at older ages increased markedly. In Japan, under the mortality conditions of 1995, the average Japanese woman aged 60 years could expect to live an additional 25 years, and the average Japanese man more than 20 years. Given the declining death rates among elderly populations, and the aforementioned extraordinary growth in the oldest-old population, some Asian countries are approaching the time when subsequent improvements in overall life expectancy will derive from changes not merely among the elderly, but primarily among the oldest old.

Improvements over time in nutritional status, health care, and education allow ever-increasing numbers of persons to reach old age. Because these persons eventually die in old age, it might seem reasonable to expect that death rates at advanced ages would be rising. However, it is now well-documented that old-age death rates in industrialized countries have reached much lower levels than ever before recorded, and that the decline has tended to accelerate in recent years (Kannisto, 1994). In Europe and parts of Asia, these mortality reductions have caught many demographers and policy planners by surprise. And, while there is considerable debate about the extent of future mortality changes and the limits to human life span (Vaupel and Jeune, 1994), the fact remains that in the world's longest-lived nations, life expectancy at birth and at older ages continues to increase. Past estimates of the size of elderly and oldest-old populations were too low, and the mortality assumptions underlying current estimates may also prove to be conservative. Such assumptions have poorly served policy planners and businesses concerned with health care costs and delivery systems, pension scheme development, housing design, and other issues related to graying populations.

II. Directions of Old-Age Pension Reform

Changes in the structure of the economy and population are leading a growing number of the report jurisdictions to reform their pension systems. Reforms that have been implemented or that are under consideration affect a wide range of pension design details, including the scope of coverage, the rate of return to participants, and the financial viability of the scheme. Reform is not limited to public pension programs but also includes government actions to encourage the development of other channels of support, such as occupational pensions and individual savings, and to reinforce family support networks.

Increasing importance of expanded pension coverage

Formal pension programs, when first introduced, generally cover only a limited segment of the work force. Old-age pension plans initially are established for government civil servants, the military, and other workers in the state sector. The majority of the labor force, in particular farmers and other self-employed workers, are excluded because of the prohibitively high administrative cost and because many self-employed workers cannot afford to make their own contributions. The elderly who are not covered by pension plans must rely upon their own savings, family, and the community for support. As development and urbanization proceed, however, traditional means of support for the elderly become less viable, giving impetus to the expansion of formal pension programs. The restructuring of the state sector and rapid growth in employment in the formal private sector are additional factors motivating expansion of pension coverage. Despite strong traditions of family ties and high individual saving rates, most of these jurisdictions have begun to experience these changes and the negative impact of limited coverage on economic competitiveness and

the welfare of the elderly. Several of the 11 economies have already undertaken measures to expand coverage, while others are contemplating similar reform.

Singapore, Malaysia, and Japan have the longest histories of mandatory coverage of non-state employees. Singapore's Central Provident Fund, first established in 1955, achieved 100 percent coverage of the working population by 1976 (Shome and Saito, 1980). The Central Provident Fund still has the highest coverage of any retirement plan in Asia (World Bank, 1994). Malaysia also has a long history of providing pensions to workers in the private sector, although coverage still is not universal. Malaysia maintains two provident funds dating to 1951 – one for private-sector employees (with only voluntary coverage for domestic workers and the self-employed) and one for public sector employees. Japan introduced reforms in 1985 to complete coverage of all private sector employees under the earnings-related tier of the public pension system (Employee's Pension Insurance). At the same time, Japan expanded the flat-rate benefits tier (National Pension Insurance) to cover all residents aged 20-59 (Liu, 1987).

South Korea and Thailand have recently introduced social insurance schemes covering private-sector workers. South Korea launched its National Pension system in 1988, expanding mandatory coverage from civil servants, the military, and educators to employees of firms with ten or more workers. Those working in firms with five to nine employees were added in 1992, and farmers, fishermen, and other rural self-employed were covered starting in 1995. The urban self-employed still participate on a voluntary basis. Thailand introduced mandatory coverage of private sector employees in firms with ten or more workers with passage of the Social Security Law in 1990. Separate systems exist for Thailand's military and state sector workers.

As China shifted towards a market-oriented economy, employment in the private sector grew rapidly. Consequently, pension system coverage, which was limited primarily to employees of government and party organizations, state-owned enterprises, and large urban collectives, was beginning to shrink. With the structural transformation of China's economy, continued enterprise-based provision of social services obstructed labor mobility and state-owned enterprise competitiveness (Naughton, 1995). China's revamped public pension scheme is gradually extending coverage to private-sector employees and the urban self-employed. However, workers in rural areas, where 70 percent of the population resides, still are excluded from the program.

Coverage of the population under public pension plans in Hong Kong (SAR), Brunei, the Philippines, Indonesia, and Taiwan is limited. The public old age support program in Hong Kong (SAR) has long focused on providing a bare subsistence to the needy elderly. Introduction of a Singapore-style scheme, with its broad coverage and relatively high level of benefits, is under discussion now in Hong Kong (SAR). By the late 1980s, just over half of the working populations in the Philippines were covered by the old-age social insurance program, with workers in the large informal sector not being covered. The mandatory public pension scheme in Indonesia covers only 8 million out of 33 million employees in the formal sector. Workers in the informal sector, who number more than 50 million, are left out (Leechor, 1996). Thus far, Taiwan has relied on the strategy of keeping income taxes low and letting families shoulder the burden of support for the elderly. Less than one-third of the population is participating in the social insurance system, and they receive only a lump sum at retirement. National annuity or pension plans have been discussed in Taiwan, but consensus on financing and level of benefits has not been reached. While Brunei provides all citizens and permanent residents with a pension

once they reach age 60, the pension is minimal, only B150 per month (just over \$100 per month). Rather than introduce a more substantial mandatory national public scheme, Brunei has chosen to require private employers to provide a pension plan comparable to that for public employees.

Conflicting pressures in setting the retirement age

Legal retirement ages, set 20 or more years ago, are proving to be very costly as life expectancies have risen and the retirement period lengthened. Given high life expectancies, the official retirement ages in China (for women), Singapore, Taiwan, and Japan (for the Employees' Pension Insurance component) are low in comparison to other Asian neighbors (Table 1). Japan began tackling the issue of raising the retirement age in the 1980s. The pensionable age for women under Japan's Employees' Pension Insurance will be raised to age 60 and will equal that for men in 2000 (Liu, 1987). Beginning in 2001, the retirement age for both men and women gradually will rise from 60 to 65 for the Employees' Pension Insurance scheme, and will match the current retirement age for the National Pension Insurance scheme.

For some economies, raising the retirement age is not presently an attractive option given the problem of surplus labor. China, the Philippines, Thailand, and Indonesia still have a large share of workers engaged in agriculture, many of whom are underemployed (Figure 3). The Philippines and Malaysia will still face successively larger cohorts of labor force entrants over the next 15 to 20 years. Moreover, the restructuring of state-owned enterprises in China and the economic restructuring occurring in Thailand, South Korea, and Indonesia threaten a period of rising unemployment, making officials reluctant to consider raising retirement ages.

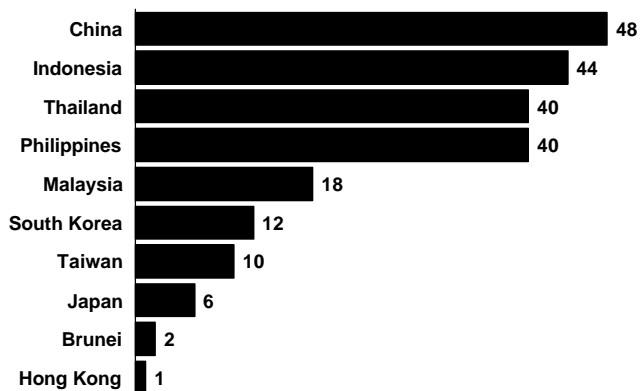
Table 1. Comparison of Retirement Ages for Receipt of Social Security Benefits and Life Expectancy Measures: 1998

Country	Retirement age		Life expectancy at birth		Life expectancy at retirement age	
	Men	Women	Men	Women	Men	Women
Brunei	60	60	70	73	18	19
China	60	51	68	71	17	27
Hong Kong	65	65	76	82	16	20
Indonesia	55	55	60	65	18	20
Japan	60	59	77	83	21	25
Malaysia	55	55	67	74	19	23
Philippines	60	60	64	69	16	18
Singapore	55	55	75	82	24	29
South Korea	60	60	70	78	17	22
Taiwan	60	55	74	80	20	27
United States	65	65	73	80	16	20
United Kingdom	65	60	75	80	15	23
France	65	65	75	83	17	21

Note: Qualifying conditions and ages for receipt of public pensions in Thailand are in the process of being established. The last three countries listed in the table are separated from the others as they are listed for reference purposes, and are not part of the study.

Sources: U.S. Social Security Administration, 1997; and U.S. Bureau of the Census, International Programs Center, International Data Base.

Figure 3. Percent of Labor Force Engaged in Agriculture, Forestry, and Fishery: 1996



Source: Various country statistical yearbooks.

China, in fact, has continued to encourage early retirement to address the problems of unemployment and surplus labor. This practice can prove to be a very costly strategy for dealing with the short-term problem of unemployment, as witnessed in Central and Eastern Europe.

In the short term, many of the 11 economies will face conflicting pressures in relation to retirement ages. Growth in the number of people of working age already is slowing down in several of the jurisdictions. In China, growth of the working age population (ages 20-59 for males and 20-50 for females) will be negative by 2015. In contrast, the growth rate of the population in the retirement ages is already double that of workers and will peak between 2010 and 2015. Continued increases in life expectancy for China mean that a male retiring at age 65 in 2020 can expect the same period of retirement as a male retiring at age 60 today (West, 1999).

Rate of return for participants declining

As initially designed, public pension schemes in many of the 11 economies required little or no contributions from covered workers and provided very generous benefits. Demographic and economic pressures are forcing governments to reduce the benefit levels and to redistribute the financing burden. The elite groups that were first covered by public pension schemes – civil servants and the military – are beginning to face required contributions and lower replacement rates. Thailand recently converted its plan for government employees from a defined-benefit plan to a defined-contribution plan with employee contributions. Taiwan began requiring civil servants to make contributions to their retirement plan in 1995.

In light of demographic trends, a pension system with pay-as-you-go financing will result in each successive generation obtaining a lower rate of return on their

participation in the scheme. Workers face this prospect in South Korea and Japan, where the social insurance system consists of defined-benefit plans and pay-as-you-go financing. Japan had to introduce substantial cuts in benefit levels in 1985; otherwise, the combined employer-employee contribution rate for the Employees' Pension Insurance would have risen from 10.6 percent in 1985 to 38.8 percent in 2030. Instead, with the phased-in benefit cuts, the contribution rate was projected to peak at 28.9 percent in 2030 (Munnell and Ernsberger, 1989). The most recent projections, however, show the contribution rate will need to rise from the present 17.35 percent to 34.3 percent in 2025 (Yasuda, 1997). With unfunded liabilities of the public pension system exceeding 100 percent of Gross Domestic Product (GDP), Japan's public pension scheme is scheduled for major reform in 1999, and serious consideration is being given to introducing defined-contribution plans and shifting away from defined-benefit plans. South Korea's recently introduced defined-benefit scheme is currently in a surplus position (reserves equal 25 percent of GDP), but with its aging population, longer term projections show enormous unfunded liabilities.

China's reformation of its pension scheme included replacement of the defined-benefit plan with a combination of plans: a defined-contribution plan with an individual account established for each worker; and a defined-benefit plan known as the social pension. Participants benefitted from the introduction of indexation of the social pension to protect retirees from losses in their standard of living. The government, however, declared that income replacement rates under the reformed system (80-90 percent) are unsustainable and has announced plans to gradually lower the replacement rate to around 50-60 percent (Du, 1997). Reform also introduced diversified financing, with the employer no longer the sole financier of the pensions. Employees now also make contributions, currently 3-5 percent of wages,

and their contribution rate is scheduled to gradually increase to 8 percent.

Provident funds operated by Malaysia, Indonesia, and Singapore offer the strongest linkage between contributions and benefits. Contribution rates vary widely across the three countries. The contribution payable to Indonesia's provident fund is only 2 percent of earnings for workers and 3.71 percent of payroll for employers. Workers in Malaysia contribute 11 percent (employers 12 percent) of wages, while Singapore has the highest contribution rate at 20 percent each for workers and employers. The actual pension-benefit level payable in the future, of course, will depend on the contribution rate and investment performance and returns.

Strengthening fund regulation and investment management: keys to sustainability

Regulations are critical to ensure that public-pension schemes are well-managed so that benefits will be there for participants when they become eligible and so that the government is protected from future liabilities. Governments also have an interest in seeing that occupational or private pension schemes are well-run and financially sound so as to enhance the living standard of the elderly and reduce the pressure on government-sponsored programs. The regulatory framework for both public and private pension schemes should address prudential norms and fiduciary standards (Vittas, 1996). For example, Singapore's Central Provident Fund maintains custody of the fund and is overseen by a tripartite board and chairman, but Central Provident Fund accounts may be managed by private sector fund managers provided they meet certain conditions. These conditions deal with personnel qualifications, minimum capital requirements, disclosure rules, segregation of fund management from other activities, and prudential investment.

Both Indonesia and Hong Kong passed laws in the early 1990s establishing

regulatory frameworks for private pensions. Provisions in Indonesia's legislation called for private pension plans to be fully funded and operated as legal entities separate from the employer's business. Approved investments and diversification standards were spelled out in the law (World Bank, 1994). Hong Kong's Occupational Retirement Schemes Ordinance requires that all schemes be registered and funded within a specified period, and that no more than 10 percent of pension assets be in securities issued by the sponsoring employer. Furthermore, retirement plans must file an annual report, including an auditor's statement, and provide annual statements to members on their vesting status and expected retirement benefits (Letts, 1993).

When deciding on acceptable forms of fund investment, countries face the often difficult task of balancing potentially competing objectives: safety, yield, and liquidity. A conservative, but often necessary, initial investment approach is to restrict fund investment to government-backed securities. Presently, regulations in China call for surpluses in the old-age pension scheme to be invested only in the central government's bonds and bank deposits. Unfortunately for many countries following this approach--including China for several years--this restriction led to negative real rates of return on pension funds and hence the erosion of pension assets. If issues of liquidity and yield can be overcome, government bonds can be a very attractive investment option for old-age pension funds because of their safety.

Restricting investment of pension fund surpluses to government bonds, however, raises the question of how the government uses these funds. Japan's two public pension funds are partially funded, and surpluses from these social insurance funds are deposited with the Trust Fund Bureau. The Trust Fund Bureau has made these assets available for financing housing, hospitals, power plants, and other public infrastructure through the purchase of government and public corporation bonds

(Munnell and Ernsberger, 1989). Provident fund assets in Malaysia and Singapore have played a similar role by being invested in government bonds for infrastructure development.

Several jurisdictions are taking an incremental approach to liberalizing investment choices, seeking to maintain the balance between fund safety and return. As capital markets have developed in the region and as fund managers and regulators have gained experience, more latitude in investment decisions is being granted to fund managers. The easing of investment restrictions increases the availability of long-term investment capital, which in turn can help drive further capital market development.

Economic restructuring has also driven diversification of investment. Malaysia has found that recent privatization of state-owned enterprises and public infrastructure has reduced government demand for borrowing and increased private sector demand for funds. As a result, the Employees' Provident Fund has been allowed to increase its holdings of equity and private sector loans and bonds.

Singapore has pursued a gradual liberalization of rules for investment of Central Provident Fund assets. One reason for the liberalization is the concern that the majority of long-term savings, which would otherwise have been managed by private fund managers, is going into the Central Provident Fund at the expense of developing Singapore's capital markets and fund management industry. Starting in 1986, Singapore allowed Central Provident Fund members to invest a portion of their balances in approved domestic stocks. In 1995, members were allowed to invest up to 20 percent of the value of their unit trust fund in foreign stocks and bonds traded on the Stock Exchange of Singapore. Or if they went through Central Provident Fund management accounts, they could invest in the stock markets of Hong Kong, Malaysia, South

Korea, Taiwan, and Thailand. In 1997, the limit on foreign currency denominated investments increased from 20 to 40 percent and unit trusts were allowed to invest in the regional capital markets. Starting in 1999, investment in capital markets outside Asia, such as the United States and Germany, will be permitted and the limit on foreign currency denominated investments will be raised to 50 percent (Asher, 1995). Funds left in the Central Provident Fund are invested in government securities, where the return is guaranteed to be at least 2.5 percent.

There are a number of advantages to allowing more diversified fund investment, including investment in private capital markets. First, a more efficient allocation of capital resources is achieved – capital is channeled towards the investment instruments with better returns relative to risk. Second, enterprises no longer are dependent on banks and financial institutions for capital; rather, they can obtain capital directly from the pension funds through the issuance of corporate stocks and bonds. Third, diversification of fund investment spurs development in other related industries. The existence of pension funds has led to an increase in the demand for private securities in a number of countries, which has led to the development of new kinds of financial instruments. Pension funds also have given impetus to the development of the risk-rating industry.

III. Key Issues

Successful development of an effective old-age security system requires coordinated policy reform on multiple fronts. Countries that move forward on the basis of a shared public-private burden in providing income support to the elderly will be in a stronger position to deal with the changing structure of their population and economy. The optimal configuration of such a system will vary across areas and depend in large measure on each economy's specific demographic, institutional, and economic

structures. These economies span a wide range of development levels, with the Philippines, China, and Indonesia having per capita GDP levels of less than \$5,000, while Hong Kong (SAR), Singapore, and Japan exceed \$20,000.

The link between pension reform and other changes

With the increased emphasis on partial and full funding of pension schemes, pension assets in the 11 economies will continue to rise and their successful management will become increasingly crucial. By 1995, the accumulation of pension assets in Singapore's Central Provident Fund equaled 60 percent of GDP (Leechor, 1996). Public pension assets in Japan, Malaysia, and South Korea also are sizeable, representing 40, 37, and 25 percent of GDP, respectively. The relative size of public pension assets in a number of Asian countries exceeds that in the United States, although they fall far short of the magnitude of private pension assets in the United States. Recent major stock market losses in the region reinforce the need for diversification and liberalization of fund investment to be coordinated with reform in fiscal policy and financial markets.

Reforms in the financial sector, in corporate governance, and in managing external debt will all serve to strengthen public and private old-age pension schemes. Better regulations, increased transparency, and adequate capitalization of financial markets will present more opportunities for pension fund investment and greater returns without excessive increases in risk. A number of countries have passed laws and regulations dealing with prudential and fiduciary matters, but they often lack the necessary supervision, auditing, and enforcement capabilities to make them effective. This lack of effective oversight was a major contributing factor to the current Asian financial crisis.

Regulations and independent oversight are essential to prevent other political objectives from poaching pension assets. Funded public pension schemes often are viewed as a vehicle for enhancing capital formation and promoting economic growth by supplying funds for infrastructure investment. Public pension schemes, however, should have the primary objective of providing for the well-being of the elderly population and ensuring social stability. The fiduciary responsibilities of the investment body of a public pension scheme need to be taken seriously. The investment board of a public pension scheme should be allowed to seek the greatest benefits for its members in the case of provident funds and to ensure the solvency of the scheme in the case of social insurance programs.

A sizable portion of pension assets in economies with underdeveloped capital markets are likely to be invested directly in projects, and the selection of specific projects may be vulnerable to political pressures. To help counter such pressures, boards engaged in direct investment require greater management skills than in the case of indirect investment, including project appraisal, implementation, and monitoring skills. External advisors can play a role in assisting public pension institutions in dealing with these matters.

Advocates of private management of public pension assets point to the potential benefits of a more efficient allocation of capital, improved investment returns, and greater economic growth. The introduction of private management for mandatory defined-contribution schemes, however, requires well-regulated, competitive, and decentralized investment managers. Furthermore, if domestic capital markets are not sufficiently developed, there is tremendous risk. One compromise is to diversify investments to external markets. Alternatively, the public pension scheme could remain centralized with funds allocated to competing private investment intermediaries.

Abolishing lifetime tenure for workers, allowing enterprises to fail, and privatizing state-owned enterprises require the restructuring of old-age pension schemes. At the same time, if pension reform is to be successful, it is imperative that enterprise reform proceed. There are many aspects to state-owned enterprise reform, including a determination of how to value and sell off state assets while preserving a portion of assets from bankrupt enterprises to cover pension obligations. In China, for example, delay in completing state-owned enterprise reform runs the risk of derailing pension system reform if the current need to bail out state-owned enterprises and excuse their pension contributions continues indefinitely. A reformed pension system has an important role to play in increasing labor efficiency — through labor mobility — and thus enterprise efficiency. A financially sound and broad based old-age security system is critical for the development of labor markets. Coordinating reform in financial markets, labor markets, corporate governance, and old-age security poses a tremendous challenge but is one that many Asian economies appear prepared to tackle.

Bibliography

- Asher, Mukul G. 1995. "Compulsory Savings in Singapore: An Alternative to the Welfare State." National Center for Policy Analysis. Policy Report No. 198, September.
- Bowring, Philip. 1997. "Pension Schemes - Asia: Asia Prepares for Aging." *Capital Trends*. Vol. 2, No. 12.
- Caselli, Graziella, Jacques Vallin, James W. Vaupel, and A. Yashin. 1987. "Age-Specific Mortality Trends in France and Italy since 1900: Period and Cohort Effects." *European Journal of Population*. Vol. 3, pp. 33-60.
- Du, Jian. 1997. "China's Social Security System: Current Situation and Reform Plans." Paper presented to the International Seminar on Social Security Funds Management, Beijing, April.
- Espina, Alvaro. 1996. "Reform of Pension Schemes in the OECD Countries." *International Labour Review*. Vol. 135, No. 2, pp. 181-206.
- Gruat, J.-V. 1997. "Trends in Social Security Systems Development." Paper presented to the International Seminar on Social Security Funds Management, Beijing, April.
- Gruber, Jonathan and David Wise. 1997. "Social Security Programs and Retirement Around the World." *National Bureau of Economic Research Working Paper Series*. No. 6134, Cambridge, MA.
- Kannisto, Vaino. 1994. *Development of Oldest-old Mortality, 1950-1990: Evidence from 28 Developed Countries*. Monograph on Population Aging 1. Odense, Denmark: Odense University Press.
- Kinsella, Kevin and Yvonne J. Gist. 1995. *Older Workers, Retirement and Pensions. A Comparative International Chartbook*. U.S. Bureau of the Census Report IPC/95-2. Washington, DC: Government Printing Office.
- Leechor, Chad. 1996. "Reforming Indonesia's Pension System." World Bank Policy Research Working Paper 1677, Washington, DC.
- Letts, Laurie W. 1993. "British Dependent Territory Enacts Long-Awaited Pension Scheme Law." *IBIS Review*. April, pp. 39-42.

- Liu, Lillian. 1987. "Social Security Reforms in Japan." *Social Security Bulletin*. Vol. 50, No. 8, pp. 29-37.
- Munnell, Alicia H. and C. Nicole Ernsberger. 1989. "Public Pension Surpluses and National Saving: Foreign Experience." *New England Economic Review*. March/April, pp. 16-38.
- Murray, Christopher J.L. and Alan D. Lopez, eds. 1996. *The Global Burden of Disease*. Boston: Harvard School of Public Health.
- Naughton, Barry. 1995. *Growing Out of the Plan*. New York: Cambridge University Press.
- Roseveare, Deborah, Willi Leibfritz, Douglas Fore, and Eckhard Wurzel. 1996. "Ageing Populations, Pension Systems and Government Budgets: Simulations for 20 OECD Countries." Organisation for Economic Co-operation and Development, Economics Department, Working Papers No. 168.
- Schulz, James H. 1993. "Chile's Approach to Retirement Income Security Attracts Worldwide Attention." *Ageing International*. Vol. 20, No. 3, pp. 51-52.
- Shome, Parthasarathi and Katrine A. Saito. 1980. "Social Security Funds in Singapore and Philippines: Ramifications of Investment Policies." *Labour and Society*. Vol. 15, No. 1, pp. 19-30.
- Suzman, Richard M., David P. Willis and Kenneth G. Manton, eds. 1992. *The Oldest Old*. New York: Oxford University Press.
- U.S. Social Security Administration. 1997. *Social Security Programs Throughout the World-1997*. Research Report #65. Washington, DC: Government Printing Office.
- Vaupel, James W. and Bernard Jeune. 1994. "The Emergence and Proliferation of Centenarians." *Population Studies of Aging*, #12. Odense, Denmark: Odense University Press.
- Vittas, Dimitri. 1996. "Designing Mandatory Pension Schemes." *Public Policy for the Private Sector*. Note No. 72, February, World Bank.
- West, Loraine A. 1999. "Pension Reform in China: Preparing for the Future." *Journal of Development Studies*. Vol. 35, No. 3, pp. 153-183.
- World Bank. 1994. *Averting the Old Age Crisis: Policies to Protect and Promote Growth*. New York: Oxford University Press.
- Yasuda, Otohiko. 1997. "Pension Schemes - Nikko Opinion." *Capital Trends*. Vol. 2, No. 12.
-

